

CALIBRATION LABORATORIES

NVLAP LAB CODE 200597-0


SCOPE OF ACCREDITATION TO ISO/IEC 17025:2017

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CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

Measured Parameter or Device Calibrated	Range	Frequency Range	Expanded Uncertainty ^{Note 3}	Remarks
ELECTROMAGNETICS – DC/LOW FREQUENCY				
AC RESISTORS and CURRENT (20/E02)				
AC Current – Measure	20 mA	400 Hz 1 kHz 5 kHz	80 µA/A 80 µA/A 80 µA/A	
	30 mA	400 Hz 1 kHz 5 kHz	90 µA/A 90 µA/A 90 µA/A	
	100 mA	400 Hz 1 kHz 5 kHz	100 µA/A 100 µA/A 100 µA/A	
	200 mA	400 Hz 1 kHz 5 kHz	95 µA/A 95 µA/A 95 µA/A	
	300 mA	400 Hz 1 kHz 5 kHz	230 µA/A 230 µA/A 230 µA/A	
	500 mA	400 Hz 1 kHz 5 kHz	185 µA/A 185 µA/A 185 µA/A	

2024-05-31 through 2025-06-30
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NVLAP LAB CODE 200597-0

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Measured Parameter or Device Calibrated	Range	Frequency Range	Expanded Uncertainty ^{Note 3}	Remarks
AC Current – Generate	1 A	400 Hz	150 μ A/A	
		1 kHz	150 μ A/A	
		5 kHz	155 μ A/A	
	2 A	400 Hz	35 μ A/A	
		1 kHz	35 μ A/A	
		5 kHz	35 μ A/A	
	3 A	400 Hz	40 μ A/A	
		1 kHz	40 μ A/A	
		5 kHz	40 μ A/A	
	5 A	400 Hz	45 μ A/A	
		1 kHz	45 μ A/A	
		5 kHz	45 μ A/A	
	10 A	400 Hz	60 μ A/A	
		1 kHz	65 μ A/A	
5 kHz		65 μ A/A		
20 A	400 Hz	75 μ A/A		
	1 kHz	75 μ A/A		
	5 kHz	75 μ A/A		
20 mA	400 Hz	80 μ A/A		
	1 kHz	80 μ A/A		
	5 kHz	80 μ A/A		
30 mA	400 Hz	90 μ A/A		
	1 kHz	90 μ A/A		
	5 kHz	90 μ A/A		
100 mA	400 Hz	100 μ A/A		
	1 kHz	100 μ A/A		
	5 kHz	100 μ A/A		
200 mA	400 Hz	95 μ A/A		
	1 kHz	95 μ A/A		
	5 kHz	95 μ A/A		



2024-05-31 through 2025-06-30
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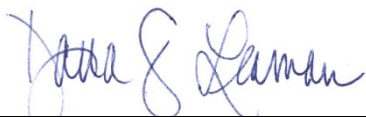
CALIBRATION LABORATORIES

NVLAP LAB CODE 200597-0

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Measured Parameter or Device Calibrated	Range	Frequency Range	Expanded Uncertainty ^{Note 3}	Remarks
	300 mA	400 Hz	230 μ A/A	
		1 kHz	230 μ A/A	
		5 kHz	230 μ A/A	
	500 mA	400 Hz	185 μ A/A	
		1 kHz	185 μ A/A	
		5 kHz	185 μ A/A	
	1 A	400 Hz	150 μ A/A	
		1 kHz	150 μ A/A	
5 kHz		155 μ A/A		
2 A	400 Hz	35 μ A/A		
	1 kHz	35 μ A/A		
	5 kHz	35 μ A/A		
3 A	400 Hz	40 μ A/A		
	1 kHz	40 μ A/A		
	5 kHz	40 μ A/A		
5 A	400 Hz	45 μ A/A		
	1 kHz	45 μ A/A		
	5 kHz	45 μ A/A		
10 A	400 Hz	60 μ A/A		
	1 kHz	65 μ A/A		
	5 kHz	65 μ A/A		
20 A	400 Hz	75 μ A/A		
	1 kHz	75 μ A/A		
	5 kHz	75 μ A/A		

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CALIBRATION LABORATORIES

NVLAP LAB CODE 200597-0

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Measured Parameter or Device Calibrated	Range	Expanded Uncertainty ^{Note 3}	Remarks
DC RESISTANCE and CURRENT (20/E05)			
DC Current – Measure	3 A	38 μ A/A	
	6 A	37 μ A/A	
	9 A	38 μ A/A	
	12 A	37 μ A/A	
	15 A	37 μ A/A	
	20 A	16 μ A/A	
	40 A	17 μ A/A	
	60 A	16 μ A/A	
	80 A	17 μ A/A	
	100 A	16 μ A/A	
DC Current – Generate	3 A	38 μ A/A	
	6 A	37 μ A/A	
	9 A	38 μ A/A	
	12 A	37 μ A/A	
	15 A	37 μ A/A	
	20 A	16 μ A/A	
	40 A	17 μ A/A	
	60 A	16 μ A/A	
	80 A	17 μ A/A	
	100 A	16 μ A/A	
DC Resistance – Measure	0.001 Ω	4.7 $\mu\Omega/\Omega$	
	0.01 Ω	2.4 $\mu\Omega/\Omega$	
	0.1 Ω	1.2 $\mu\Omega/\Omega$	
	1 Ω	0.23 $\mu\Omega/\Omega$	
	10 Ω	0.24 $\mu\Omega/\Omega$	
	100 Ω	0.35 $\mu\Omega/\Omega$	
	1 k Ω	0.33 $\mu\Omega/\Omega$	
	10 k Ω	0.33 $\mu\Omega/\Omega$	
	100 k Ω	0.43 $\mu\Omega/\Omega$	
	1 M Ω	1.2 $\mu\Omega/\Omega$	
10 M Ω	6.9 $\mu\Omega/\Omega$		
DC Resistance – Generate	0.001 Ω	4.7 $\mu\Omega/\Omega$	
	0.01 Ω	2.4 $\mu\Omega/\Omega$	
	0.1 Ω	1.2 $\mu\Omega/\Omega$	



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NVLAP LAB CODE 200597-0


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Measured Parameter or Device Calibrated	Range	Expanded Uncertainty ^{Note 3}	Remarks
	1 Ω 10 Ω 100 Ω 1 kΩ 10 kΩ 100 kΩ 1 MΩ 10 MΩ	0.23 μΩ/Ω 0.24 μΩ/Ω 0.35 μΩ/Ω 0.33 μΩ/Ω 0.33 μΩ/Ω 0.43 μΩ/Ω 1.2 μΩ/Ω 6.9 μΩ/Ω	
DC VOLTAGE (20/E06)			
DC Voltage – Measure and Generate	100 mV 1 V 1.018 V 10 V 100 V 1000 V	2.2 μV/V 2.1 μV/V 2.1 μV/V 2.1 μV/V 2.1 μV/V 2.2 μV/V	
DC Voltage – Generate	0.1 V to 2.2 V > 2.2 V to 22 V > 22 V to 220 V > 220 V to 1000 V	4.1 E-06 V 2.2 E-05 V 2.7 E-04 V 2.1 E-03 V	

CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

Measured Parameter or Device Calibrated	Range	Frequency Range	Expanded Uncertainty ^{Note 3}	Remarks
LF AC VOLTAGE (20/E09)				
AC Voltage – Measure and Generate	22 mV	10 Hz 20 Hz 40 Hz 100 Hz 1 kHz 10 kHz 20 kHz 50 kHz	80 μV/V 65 μV/V 65 μV/V 65 μV/V 65 μV/V 65 μV/V 70 μV/V 90 μV/V	

2024-05-31 through 2025-06-30
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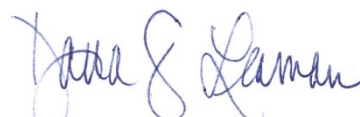

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CALIBRATION LABORATORIES

NVLAP LAB CODE 200597-0

CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

Measured Parameter or Device Calibrated	Range	Frequency Range	Expanded Uncertainty ^{Note 3}	Remarks
	220 mV	100 kHz	160 μ V/V	
		300 kHz	240 μ V/V	
		500 kHz	350 μ V/V	
		800 kHz	420 μ V/V	
		1 MHz	410 μ V/V	
		10 Hz	35 μ V/V	
		20 Hz	25 μ V/V	
		40 Hz	18 μ V/V	
		100 Hz	18 μ V/V	
		1 kHz	12 μ V/V	
		10 kHz	16 μ V/V	
		20 kHz	16 μ V/V	
		50 kHz	30 μ V/V	
		100 kHz	45 μ V/V	
		300 kHz	85 μ V/V	
	500 kHz	150 μ V/V		
	800 kHz	230 μ V/V		
	1 MHz	310 μ V/V		
	700 mV	10 Hz	30 μ V/V	
		20 Hz	25 μ V/V	
		40 Hz	12 μ V/V	
		100 Hz	14 μ V/V	
		1 kHz	14 μ V/V	
		10 kHz	14 μ V/V	
		20 kHz	14 μ V/V	
		50 kHz	14 μ V/V	
		100 kHz	18 μ V/V	
		300 kHz	30 μ V/V	
		500 kHz	55 μ V/V	
		800 kHz	85 μ V/V	
1 MHz		120 μ V/V		
2.2 V		10 Hz	30 μ V/V	
		20 Hz	16 μ V/V	
	40 Hz	6 μ V/V		
	100 Hz	7 μ V/V		
	1 kHz	6 μ V/V		



2024-05-31 through 2025-06-30
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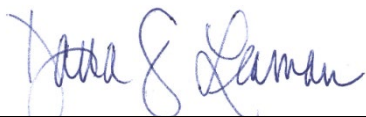
CALIBRATION LABORATORIES

NVLAP LAB CODE 200597-0

CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

Measured Parameter or Device Calibrated	Range	Frequency Range	Expanded Uncertainty ^{Note 3}	Remarks
	7 V	10 kHz	6 μ V/V	
		20 kHz	6 μ V/V	
		50 kHz	6 μ V/V	
		100 kHz	12 μ V/V	
		300 kHz	25 μ V/V	
		500 kHz	30 μ V/V	
		800 kHz	35 μ V/V	
		1 MHz	45 μ V/V	
		10 Hz	30 μ V/V	
		20 Hz	16 μ V/V	
		40 Hz	6 μ V/V	
		100 Hz	6 μ V/V	
		1 kHz	6 μ V/V	
		10 kHz	6 μ V/V	
		20 kHz	6 μ V/V	
		50 kHz	7 μ V/V	
		100 kHz	8 μ V/V	
		300 kHz	25 μ V/V	
	500 kHz	30 μ V/V		
	800 kHz	35 μ V/V		
	1 MHz	45 μ V/V		
	22 V	10 Hz	30 μ V/V	
		20 Hz	16 μ V/V	
		40 Hz	7 μ V/V	
		100 Hz	7 μ V/V	
		1 kHz	7 μ V/V	
		10 kHz	7 μ V/V	
		20 kHz	7 μ V/V	
		50 kHz	8 μ V/V	
		100 kHz	12 μ V/V	
		300 kHz	25 μ V/V	
		500 kHz	30 μ V/V	
		800 kHz	35 μ V/V	
		1 MHz	50 μ V/V	

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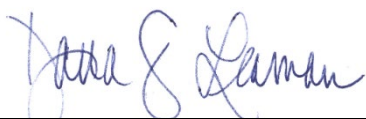
CALIBRATION LABORATORIES

NVLAP LAB CODE 200597-0

CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

Measured Parameter or Device Calibrated	Range	Frequency Range	Expanded Uncertainty ^{Note 3}	Remarks		
	70 V	10 Hz	30 μ V/V			
		20 Hz	16 μ V/V			
		40 Hz	7 μ V/V			
		100 Hz	7 μ V/V			
		1 kHz	7 μ V/V			
		10 kHz	7 μ V/V			
		20 kHz	7 μ V/V			
		50 kHz	9 μ V/V			
		100 kHz	12 μ V/V			
		300 kHz	30 μ V/V			
		220 V	10 Hz		40 μ V/V	
			20 Hz		16 μ V/V	
	40 Hz		9 μ V/V			
	100 Hz		9 μ V/V			
	1 kHz		9 μ V/V			
	10 kHz		9 μ V/V			
	20 kHz		9 μ V/V			
	50 kHz		12 μ V/V			
	100 kHz		18 μ V/V			
	1000 V		40 Hz		14 μ V/V	
		100 Hz	12 μ V/V			
		1 kHz	9 μ V/V			
		10 kHz	7 μ V/V			
		20 kHz	9 μ V/V			
		50 kHz	20 μ V/V			
		100 kHz	35 μ V/V			
		LF CAPACITANCE (20/E10)				
	LF Capacitance – Measure	1000 pF	1 kHz		4.2 μ F/F	
		100 pF			6.6 μ F/F	
		10 pF			16 μ F/F	
LF Capacitance – Generate	1000 pF	1 kHz	4.1 μ F/F			
	100 pF		5.8 μ F/F			
	10 pF		16 μ F/F			

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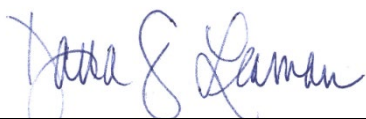
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NVLAP LAB CODE 200597-0

CALIBRATION AND MEASUREMENT CAPABILITIES (CMC) ^{Notes 1,2}

Measured Parameter or Device Calibrated	Range	Frequency Range	Expanded Uncertainty ^{Note 3}	Remarks		
PHASE METERS (20/E15)						
Phase Meters – Generate 10 V (rms)	30° to 360°	60 Hz	0.011°			
		400 Hz	0.011°			
		1 kHz	0.011°			
		2 kHz	0.011°			
		5 kHz	0.011°			
		10 kHz	0.011°			
		20 kHz	0.011°			
		50 kHz	0.011°			
		50 V (rms)	30° to 360°		60 Hz	0.004°
					400 Hz	0.004°
100 V (rms)	30° to 360°	60 Hz	0.004°			
		400 Hz	0.004°			
Phase Meters – Measure 10 V (rms)	30° to 360°	60 Hz	0.026°			
		400 Hz	0.026°			
		1 kHz	0.026°			
		2 kHz	0.026°			
		5 kHz	0.026°			
		10 kHz	0.026°			
		20 kHz	0.026°			
		50 kHz	0.026°			
		50 V (rms)	30° to 360°		60 Hz	0.024°
					400 Hz	0.024°
		100 V (rms)	30° to 360°		60 Hz	0.024°
					400 Hz	0.024°

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Measured Parameter or Device Calibrated	Range	Expanded Uncertainty ^{Note 3,5}	Remarks
VOLTAGE TRANSFORMERS (20/E19)			
Voltage Transformers	0 to 1	0.00012 %	Ratio; Actual ratio could be ≤ 1.1
TIME and FREQUENCY			
FREQUENCY DISSEMINATION (20/F01)			
Frequency Dissemination – Measure Generate	0 MHz to 10 MHz 0 MHz to 10 MHz	1.6×10^{-8} 3.3×10^{-12}	
MECHANICAL			
FORCE (20/M06)			
Compression and Tension	0.45 kN to 2.22 kN 2.22 kN to 8.90 kN 8.90 kN to 22.24 kN 22.24 kN to 44.48 kN 44.48 kN to 111.21 kN 111.21 kN to 222.41 kN 222.41 kN to 444.82 kN	0.03 % 0.03 % 0.03 % 0.04 % 0.04 % 0.03 % 0.03 %	2.22 kN Deadweight Tester 8.90 kN Load Cell 22.24 kN Load Cell 44.48 kN Load Cell 111.21 kN Load Cell 222.41 kN Load Cell 444.82 kN Load Cell
THERMODYNAMIC			
PRESSURE (20/T05)			
Pressure – Generate	0.069 MPa to 4.83 MPa 2.76 MPa to 11.03 MPa 11.03 MPa to 68.95 MPa	0.005 % 0.005 % 0.0055 %	Pneumatic Hydraulic
RESISTANCE THERMOMETRY (20/T07)			
SPRT	-196 °C -38.8344 °C 0.01 °C 231.928 °C 419.527 °C -196 °C to 500 °C	5 mK 3 mK 1 mK 3 mK 4 mK 19 mK	N ₂ Boiling Point Hg Fixed Point H ₂ O Fixed Point Sn Fixed Point Zn Fixed Point IPRT Compared to SPRT
END			

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CALIBRATION LABORATORIES

NVLAP LAB CODE 200597-0

Notes

Note 1: A Calibration and Measurement Capability (CMC) is a description of the best result of a calibration or measurement (result with the smallest uncertainty of measurement) that is available to the laboratory's customers under normal conditions, when performing more or less routine calibrations of nearly ideal measurement standards or instruments. The CMC is described in the laboratory's scope of accreditation by: the measurement parameter/device being calibrated, the measurement range, the uncertainty associated with that range (see note 3), and remarks on additional parameters, if applicable.

Note 2: Calibration and Measurement Capabilities are traceable to the national measurement standards of the U.S. or to the national measurement standards of other countries and are thus traceable to the internationally accepted representation of the appropriate SI (Système International) unit.

Note 3: The uncertainty associated with a measurement in a CMC is an expanded uncertainty with a level of confidence of approximately 95 %, typically using a coverage factor of $k = 2$. However, laboratories may report a coverage factor different than $k = 2$ to achieve the 95 % level of confidence. Units for the measure and its uncertainty are to match. Exceptions to this occur when marketplace practice employs mixed units, such as when the artifact to be measured is labeled in non-SI units and the uncertainty is given in SI units (Example: 5 lb weight with uncertainty given in mg).

Note 3a: The uncertainty of a specific calibration by the laboratory may be greater than the uncertainty in the CMC due to the condition and behavior of the customer's device and specific circumstances of the calibration. The uncertainties quoted do not include possible effects on the calibrated device of transportation, long term stability, or intended use.

Note 3b: As the CMC represents the best measurement results achievable under normal conditions, the accredited calibration laboratory shall not report smaller uncertainty of measurement than that given in a CMC for calibrations or measurements covered by that CMC.

Note 3c: As described in Note 1, CMCs cover calibrations and measurements that are available to the laboratory's customers under *normal conditions*. However, the laboratory may have the capability to offer special tests, employing special conditions, which yield calibration or measurement results with lower uncertainties. Such special tests are not covered by the CMCs and are outside the laboratory's scope of accreditation. In this case, NVLAP requirements for the labeling, on calibration reports, of results outside the laboratory's scope of accreditation apply. These requirements are set out in Annex A.5 of NIST Handbook 150, Procedures and General Requirements.

Note 4: Uncertainties associated with field service calibration may be greater as they incorporate on-site environmental contributions, transportation effects, or other factors that affect the measurements. (This note applies only if marked in the body of the scope.)

Note 5: Values listed with percent (%) are percent of reading or generated value unless otherwise noted.

Note 6: NVLAP accreditation is the formal recognition of specific calibration capabilities. Neither NVLAP nor NIST guarantee the accuracy of individual calibrations made by accredited laboratories.

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